THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OF PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An isolated DNA molecule comprising a nucleotide sequence that hybridizes to the nucleotide sequence selected from the group consisting of SEQ ID NO's:1, 3 and 5 or a fragment or derivative thereof, excluding an AP2 domain repeat1-linker-AP2 domain repeat2 region, under moderate or stringent hybridization conditions.

2. The isolated DNA molecule of claim 1 wherein said isolated DNA molecule comprises at least 27 contiguous nucleotides of a nucleotide sequence selected from the group consisting of SEQ ID NO:1, 3 and 5.

3. The isolated DNA molecule of claim 1 wherein said isolated DNA molecule comprises a nucleotide sequence that is at least 70% homologous with a nucleotide sequence, or a fragment or derivative thereof, selected from the group consisting of SEQ ID NO:1, 3 and 5.

4. An isolated DNA molecule comprising a nucleic acid sequence encoding a protein, wherein said protein when present at a sufficient level within a plant cell renders said cell embryogenic, increases the regenerative capacity of said plant cell, or both renders said plant cell embryogenic and increases the regenerative capacity of said plant cell, said isolated DNA molecule having at least 70% homology within a nucleotide sequence, or a fragment or derivative thereof, selected from the group consisting of SEQ ID NO's:1, 3 and 5.

5. The isolated DNA molecule of claim 4 comprising a nucleotide sequence that hybridizes to nucleotides 1620-4873 of SEQ ID NO:5 or a fragment or derivative thereof, under moderate or stringent conditions.

6. The isolated DNA molecule of claim 4 comprising a nucleotide sequence that hybridizes to the nucleotide sequence of SEQ ID NO:1 or a fragment or derivative thereof, under moderate or stringent conditions.

7. The isolated DNA molecule of claim 4 comprising a nucleotide sequence that hybridizes to the nucleotide sequence of SEQ ID NO:3 or a fragment or derivative thereof, under stringent conditions.

8. The isolated DNA molecule of claim 6, wherein said DNA encodes a protein as defined by SEQ ID NO:2.

9. The isolated DNA molecule of claim 7, wherein said DNA encodes a protein as defined by SEQ ID NO:4.

10. A vector comprising the isolated DNA molecule as claimed in any one of claims 1 to 9, wherein said isolated DNA molecule is under control of a regulatory element that directs expression of said DNA in a plant cell.

11. The vector of claim 10, wherein said regulatory element is a constitutive regulatory element

12. The vector of claim 10, wherein said regulatory element is an inducible regulatory element.

13. The vector of claim 10, wherein said regulatory element is a tissue specific regulatory element

14. The vector of claim 10, wherein said regulatory element is an developmentally active regulatory element.

15. A transformed plant cell comprising the vector of any one of claims 10 to 14.

16. A transformed plant comprising the vector of any one of claims 10 to 14.

17. A seed obtained from the transformed plant of claim 16.

18 An isolated protein encoded by the isolated DNA molecule as claimed in any one of claims 4 to 9.

19. A method of producing asexually derived embryos comprising:
   i) transforming a plant cell with the vector of any one of claims 10 to 14;
   ii) growing said plant cell to produce transformed tissue;
   iii) selecting said transformed tissue for occurrence of said isolated DNA molecule; and
   iv) assaying said transformed plant for asexual embryo production.

20. The method of claim 19 wherein the step of assaying involves assaying for adventitious embryony.

21. The method of claim 19, wherein the step of assaying involves assaying for somatic embryos.

22. The method of claim 19, wherein the step of assaying involves assaying for gametophytic embryos.

23. The method of claim 19, wherein the step of assaying involves assaying for haploid parthenogenesis of the embryo sac.

24. The method of claim 19, wherein the step of assaying involves assaying for diplospory.

25 A method of modifying the regenerative capacity of a plant comprising

i) transforming a plant cell with the vector of any one of claims 10 to 14;
ii) growing said transformed plant cell to produce transformed tissue; and
iii) assaying said transformed plant tissue for enhanced regeneration as compared to wild-type tissue.

26. The method of claim 25, wherein the step of growing said transformed plant cell, the step of assaying said transformed plant tissue, or both the step of growing said transformed plant cell and the step of assaying said transformed plant tissue are carried out in the absence of a growth regulator.

27. A method of selecting a transformed plant comprising;

i) transforming a normally non-regenerative plant with a vector of any one of claims 10 to 14; and
ii) determining whether said transformed plant is able to regenerate under conditions in which said normally non-regenerative plant does not regenerate.

28. The isolated DNA molecule of claim 1 comprising a DNA sequence that comprises at least about 70% similarity with nucleotides 1-1619 of SEQ ID NO:5, or a fragment thereof.

29. The isolated DNA molecule of claim 1 wherein said isolated molecule comprises at least 22 contiguous nucleotides within nucleotides 1-1619 of SEQ ID NO:5.

30. A vector comprising the isolated DNA molecule of either claim 28 or 29 operably associated with a gene of interest, wherein said isolated DNA molecule directs the expression of said gene of interest within a plant cell.

31. The vector as defined by claim 30, wherein said gene of interest is heterologous with respect to the isolated DNA molecule.

32. The vector as defined by claim 31, wherein said gene of interest is selected from the group consisting of a pharmaceutically active protein, antibody, industrial enzyme, protein supplement, nutraceutical, storage protein, animal feed and animal feed supplement.

33. A transformed plant cell comprising the vector of either claim 30, 31 or 32.

34. A transformed plant comprising the vector of either claim 30, 31 or 32.

35. A seed obtained from the transformed plant of claim 34.

36. A method for directing the expression of a gene of interest within a developing embryo of a plant comprising transforming said plant with the vector as defined by either claim 30, 31 or 32.

37. A use of a nucleotide sequence as defined in any one of claims 4, 5, 6 or 7 as a selectable marker.

38. A method of producing asexually derived embryos comprising:

i) transiently transforming a plant cell with the vector of any one of claims 10 to 14, or introducing into said plant cell the protein of claim 18, to produce a modified plant cell;
ii) growing said modified plant cell to produce tissue; and
iii) assaying said tissue for asexual embryo formation.

39. The method of claim 38 wherein the step of assaying involves assaying for adventitious embryony.

40. The method of claim 38, wherein the step of assaying involves assaying for somatic embryos.

41. The method of claim 38, wherein the step of assaying involves assaying for gametophytic embryos.

42. The method of claim 38, wherein the step of assaying involves assaying for haploid parthenogenesis of the embryo sac.

43. The method of claim 38, wherein the step of assaying involves assaying for diplospory.

44 A method of modifying the regenerative capacity of a plant comprising

i) transiently transforming a plant cell with the vector of any one of claims 10 to 14 or introducing into said plant cell the protein of claim 18, to produce a modified plant cell;

ii) growing said modified plant cell to produce tissue; and

iii) assaying said tissue for enhanced regeneration as compared to wild-type tissue.

45. The method of claim 44, wherein the step of growing said modified plant cell, the step of assaying said tissue, or both the step of growing said modified plant cell and the step of assaying said tissue are carried out in the absence of a growth regulator.

46. A method of producing an apomictic plant comprising:

i) transforming a plant with the vector of any one of claims 10 to 14, to produce a transformed plant;

ii) selecting said transformed plant for occurrence of said isolated DNA molecule; and

iii) assaying said transformed plant for asexual embryo production.

47. The method of claim 46 wherein the step of assaying involves assaying for adventitious embryony.

48. The method of claim 46, wherein the step of assaying involves assaying for somatic embryos.

49. The method of claim 46, wherein the step of assaying involves assaying for gametophytic embryos.

50. The method of claim 46, wherein the step of assaying involves assaying for parthenogenesis of the embryo sac.

51 A method of modifying the regenerative capacity of a plant comprising

i) transiently transforming a plant cell with the vector of any one of claims 10 to 14, or introducing into said plant cell the protein of claim 18;
ii) growing said plant cell to form tissue; and
iii) assaying said tissue for enhanced regeneration as compared to wild-type tissue.

52. The method of claim 51, wherein the step of growing said plant cell, the step of assaying said tissue, or both the step of growing said plant cell and the step of assaying said tissue are carried out in the absence of a growth regulator.

53. A method of selecting a modified plant comprising;

i) transiently transforming a normally non-regenerative plant with a vector of any one of claims 10 to 14, or introducing into said normally non-regenerative plant the protein of claim 18, to produce said modified plant; and

ii) determining whether said modified plant is able to regenerate under conditions in which said normally non-regenerative plant does not germinate.

54. An isolated DNA molecule comprising a sequence encoding a protein consisting of two AP2 DNA binding domains, which when said protein is expressed at a sufficient level in a plant cell, renders said cell embryogenic, or increase the regenerative capacity of said plant cell, or both renders said cell embryogenic and increase the regenerative capacity of said plant cell.

55. A method of producing a protein of interest comprising

i) transforming a plant with at least one vector, said at least one vector selected from any one of claims 10 to 14 to produce a transformed plant;

ii) selecting said transformed plant for occurrence of said isolated DNA molecule; and

iv) growing said transformed plant in order to produce said protein of interest, wherein expression of said protein of interest is induced by the expression product of said isolated DNA.

56 The method of claim 55, wherein said transformed plant is transformed with a second vector comprising a nucleotide sequence encoding said protein of interest under the control of a regulatory element, said regulatory element induced by the expression product of said isolated DNA..

57. The method of claim 55, wherein said protein of interest is a native protein.

58. The method of any one of claims 55 or 56, wherein said protein of interest is selected from the group consisting of a pharmaceutically active protein, antibody, industrial enzyme, protein supplement, nutraceutical, storage protein, an enzyme involved in oil biosynthesis, animal feed, and animal feed supplement.

59. The isolated DNA molecule of claim of any one of claims 4 to 7, wherein said isolated DNA molecule encodes a protein that is at least 70% similar with the amino acid defined by SEQ ID NO:2.

60. The isolated DNA molecule of claim of any one of claims 4 to 7, wherein said isolated DNA molecule encodes a protein that is at least 70% similar with the amino acid defined by SEQ ID NO:4.

61 The isolated protein of claim 18, wherein said protein comprises from about 30 to about 541 amino acids of the sequence disclosed in SEQ ID NO:2

62. The isolated protein of claim 18, wherein said protein comprises from about from about 30 to about 561 amino acids of the sequence disclosed in SEQ ID NO: 4.

63. An isolated DNA molecule comprising a nucleotide sequence that hybridizes to SEQ ID NO:6, excluding an AP2 domain repeat1-linker-AP2 domain repeat2 region, under stringent conditions.

64. The isolated DNA molecule of claim 4 comprising a nucleotide sequence that hybridizes to nucleotides 1620-4873 of SEQ ID NO:6 or a fragment or derivative thereof, under moderate or stringent conditions.

65. The isolated DNA molecule of claim 64, wherein said DNA encodes a protein as defined by SEQ ID NO:7.

66 A vector comprising the isolated DNA molecule as claimed in any one of claims 63 to 65, wherein said isolated DNA molecule is under control of a regulatory element that directs expression of said DNA in a plant cell.

67. The vector of claim 66, wherein said regulatory element is a constitutive regulatory element

68. The vector of claim 67, wherein said regulatory element is an inducible regulatory element.

69. The vector of claim 67, wherein said regulatory element is a tissue specific regulatory element

70. The vector of claim 67, wherein said regulatory element is an developmentally active regulatory element.

71. A transformed plant cell comprising the vector of any one of claims 66 to 70.

72. A transformed plant comprising the vector of any one of claims 66 to 70.

73. A seed obtained from the transformed plant of claim 72.

74 An isolated protein encoded by the isolated DNA molecule as claimed in claim 65.